

What is claimed is:

1. A color laser display apparatus comprising:
 - a laser light source which emits ultraviolet laser light;
 - 5 a modulation unit which modulates said ultraviolet laser light;
 - a display unit which includes a fluorescent screen; and
 - 10 a scanning unit which two-dimensionally scans said fluorescent screen with said ultraviolet laser light;
 - said fluorescent screen including for each pixel,
 - 15 red fluorescent material which emits red light in response to said ultraviolet laser light,
 - green fluorescent material which emits green light in response to said ultraviolet laser light, and
 - 20 blue fluorescent material which emits blue light in response to said ultraviolet laser light.

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2. A color laser display apparatus according to claim 1, wherein said laser light source is a semiconductor laser device having an active layer made of a GaN material.

3. A color laser display apparatus according to claim 2, wherein said semiconductor laser device is one of a tapered-amplifier type, an α -DFB type, a phase-synchronization array type, and a surface emitting type.

4. A color laser display apparatus according

to claim 1, wherein said laser light source includes,

5 a semiconductor laser device which has an active layer made of a GaN material so as to emit excitation laser light, and

10 a surface emitting semiconductor laser device which has an active layer made of a GaN material and formed on a substrate, and is excited by the excitation laser light to emit said ultraviolet laser light.

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5. A color laser display apparatus according to claim 1, wherein said laser light source is a fiber laser device including,

5 an excitation light source which emits excitation light,

10 an optical fiber doped with at least one rare earth element which emits a laser beam when excited by the excitation light, where the at least one rare earth element includes Pr^{3+} , and

15 a wavelength conversion element which converts said laser beam into said ultraviolet laser light.

6. A color laser display apparatus according to claim 1, wherein said red fluorescent material is ZnCdS:Ag, said green fluorescent material is ZnS:Cu, and said blue fluorescent material is ZnS:Ag.

7. A color laser display apparatus according to claim 1, wherein said light source is:

5 a gallium nitride semiconductor laser; or a semiconductor laser excited solid state laser in which a laser beam, obtained by exciting a solid state laser crystal with a gallium nitride semiconductor laser, is wavelength converted by an

optical wavelength conversion element then emitted;
or

10 a fiber laser or a fiber amplifier in
which a laser beam, obtained by exciting a fiber
with a semiconductor laser that emits light in an
infrared range, is wavelength converted by an
optical wavelength conversion element then emitted;

15 or

a fiber laser, in which a laser beam,
obtained by exciting a fiber with a gallium nitride
semiconductor laser, is wavelength converted by an
optical wavelength conversion element then emitted.

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5 8. A color laser display according to claim 1,
wherein said laser light modulating means comprises
a spatial light modulator driven by an
electromechanical operation that utilizes static
electricity.

9. A color laser display according to claim 8
wherein said spatial light modulator is a digital
micro mirror device comprising a plurality of
movable micro mirrors.

10. A color laser display device according to
claim 8 wherein said spatial light modulator
comprises grating light valve elements of a
reflective diffraction grating type.

11. A color laser display device according to
claim 7 wherein said spatial light modulator
comprises reflective diffraction grating type
grating light valve elements consisting of:

5 a plurality of fixed microelements
having a first reflective surface formed thereon;
and

a plurality of movable microelements
having a second reflective surface formed thereon;

10 wherein said fixed and movable
microelements are alternately arranged on a
substrate in a predetermined direction, so that when
static electricity is applied, the movable
microelements move, changing the distance between
15 the first and second reflective surfaces, thereby
diffracting light incident thereto.

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12. A color laser display according to claim
10, wherein said spatial light modulator comprises a
plurality of grating light valve elements that are
arranged in a single line in a direction
5 substantially perpendicular to said scanning
direction, or arranged as a light modulating array
in a plurality of rows.

13. A color laser display according to claim
12 wherein the lengthwise direction of the grating
of said grating light valve elements match the
arranging direction of said light modulating array.

14. A color laser display according to claim
10 wherein said spatial light modulator is
positioned so that it is rotated at a predetermined
angle in relation to the optical axis around the
5 normal line of the surface thereof.

15. A color laser display according to claim 1
wherein said laser light source comprises:

 a first laser light source which is
 a plurality of gallium nitride semiconductor lasers
5 each coupled to a plurality of fibers; and
 a second laser light source which is a
 a plurality of gallium nitride semiconductor lasers

coupled to a plurality of fibers via a wave multiplexing optical system;

10 wherein the fibers of at least one of said first and second laser light sources is arranged in an array form to constitute a linear laser light source that emits a linear laser light flux; or

15 wherein the fibers of at least one of said first second laser light sources is arranged in a bundle form to constitute a planar laser light source that emits a spot beam laser light flux.

16. A color laser display according to claim 1 wherein said laser light source comprises a plurality of laser light sources that emit a light beams with a predetermined wavelength range that 5 includes ultraviolet, and a wave multiplexing optical system that multiplexes the laser light emitted from said plurality of laser light sources.

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